AMENDMENTS TO THE CLAIMS

1. (Original) An emitter for emitting radiation in a first range of frequencies comprising:

a photoconductive material; and

first and second contact elements separated by a photoconducting gap provided by said photoconducting material, for applying a bias across said photoconducting gap,

wherein at least one of said first and second contact elements comprises a resistive element for restricting current flow between said first and second contact elements in a second range of frequencies lower than the first range of frequencies.

2. (Original) An emitter according to claim 1, wherein the first range of frequencies falls within at least a part of the frequency range from 0.02THz to 100THz.

3. (Currently Amended) An emitter according to ~~either claims~~ claim 1 ~~or 2~~, wherein said at least one contact element further comprises an antenna electrode provided in series with said resistive element, said antenna electrode being provided adjacent said photoconducting gap and having a lower resistance than said resistive element.

4. (Currently Amended) An emitter according to ~~any preceding claims~~ claim 1, wherein said at least one electrode further comprises a contact electrode provided in series with said resistive element, to allow an external electrical connection to be made to said resistive element.

5. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein the resistive element is integrated onto the emitter.

6. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein the resistive element comprises at least one of the following:

Indium Tin Oxide, Indium Oxide, Tin Oxide, Indium Titanium Oxide, Titanium Oxide, Nickel-Chrome, doped Silicon Dioxide, Silicide, Poly-Silicon, Carbon, doped GaAs, lightly doped Silicon, nichrome or AlGaAs heterolayer.

7. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein the photoconductive material comprises at least one of the following:

Si, Ge, GaAs, LT-GaAs, As-implanted GaAs, InAs, ion-implanted Si, ion-implanted Ge, LT-InAs, LT-InGaAs, LT-AlGaAs, a III-V group semiconductor, a II-VI group semiconductor, an ion-implanted semiconductor and a low temperature grown semiconductor.

8. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, further comprising a dielectric film at least partially covering an emission surface of the emitter.

9. (Original) An emitter according to claim 3, wherein a dielectric film at least partially covers the antenna electrode.

10. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein a dielectric film at least partially covers the photoconductive gap.

11. (Currently Amended) An emitter according to ~~any of claims 8 to 10~~ claim 8, wherein the dielectric film comprises at least one of the following:

Silicon Nitride, Polyimide, Gallium Nitride, Acrylic or Silicon Dioxide.

12. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein the edges of the contact elements which are adjacent the photoconducting gap are recessed below the surface of the photoconductive material.

13. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein the edges of the first and second contact elements provided adjacent the photoconducting gap are rounded.

14. (Currently Amended) An emitter according to ~~any preceding~~ claim 1, wherein said resistive element has a resistance R, where $R > \frac{1}{AC}$ where A is the repetition frequency of an excitation laser and C is the capacitance of the contact elements.

15. (Original) An emitter according to ~~any preceding~~ claim 1, wherein said resistive element has a resistance of at least 5kΩ.

16. (Original) A method of determining a resistive value for use as a biasing resistance in a terahertz emitter, comprising:

determining a value indicative of a repetition frequency of an excitation laser;

determining a value indicative of a capacitance of the emitter; and

calculating the resistive value by equating the value indicative of the repetition frequency with an RC-time constant of the terahertz emitter.

17. (Original) A method for determining a resistive value, R, for use as a series biasing resistance in a terahertz emitter comprising a photoconductive substrate and an antenna electrode on the substrate surface, the method comprising:

determining the resistive value using the formula:

$$A = 1/(RC)$$

where A is a repetition frequency of an excitation laser and C is the capacitance of the antenna electrode.

18. (Original) The method of claim 17, wherein C further comprises the capacitance of conductors between the resistive element and an antenna, which feed the antenna.

19. (Currently Amended) An apparatus for imaging comprising an emitter as claimed ~~in any one of claims 1 to 15~~ claim 1.

20. (Currently Amended) An apparatus for determining compositional information of structures comprising an emitter as claimed in ~~any one of claims 1 to 15~~ claim 1.

21. (Currently Amended) The apparatus of ~~claims~~ claim 19 ~~or 20~~, further comprising a transformer for biasing the emitter with an AC voltage.

22. (Currently Amended) The apparatus of ~~any one of claims 19 to 21~~ claim 19, further comprising a pulsed laser source.

23. (Currently Amended) A system for generating and detecting terahertz radiation including an emitter as claimed in ~~any one of claims 1 to 15~~ claim 1, and a detector which comprises a bowtie antenna terahertz receiver.

24. (Currently Amended) ~~An emitter as herein described with reference to the accompanying drawings~~

A system for generating THz radiation, comprising:

an emitter comprising a photoconductive material and first and second contact elements separated by a photoconducting gap provided by said photoconducting material for applying a bias across said photoconducting gap,

a bias signal source for said emitter configured to output and AC signal; and

a step-up transformer located between said bias signal source and said emitter.

25. (New) A system according to claim 24, wherein said bias signal source is configured to output a signal having a voltage in the range from 1V to 5V.

26. (New) A system according to claim 24, wherein said transformer has a ratio of 1:50.